Vision Document

OU Capstone Group 30

Vision Document for NICU Application

Revision History

12/10/20 1.0 Initial version Group 30

Table of Contents

1 Introduction

1.1 Purpose

The purpose of this document is to outline the goal of the project, identify key users and stakeholders, and list the necessary requirements for the product.

1.2 Solution Overview

This software looks to assist charge nurses with assigning oncoming scheduled nurses to NICU infants at the beginning of each shift based on a matching algorithm for nursing and patient characteristics. The system should be able to show updated data and assignments for all users when changes are made to the assignments. The software will suggest available nurses for each room based off of their capabilities, the patients characteristics, and availabilty.

1.3 References

Information for this vision document was obtained through emails with our contacts at the hospital in addition to an online meeting with them. There was also an initial document sent by the contacts at the hospital outlining the project and its purpose.

2 User Description

2.1 User/Market Demographics

Nurses in the neonatal intensive care unit at OU Children's Hospital currently have to assign nurses to patients by hand, using a paper spreadsheet. The roster is printed out from a facility scheduler for the staff assigned each day for the night shift and the following day shift. Nurses are written into assignments by hand as well as phone number assigned to the nurse. The key demographic for our software would be these nurses, as well as those who are in charge of creating the spreadsheet. This program could also potentially be used by other hospitals with a similar lack of automated assignment software.

2.2 User Personas

The first primary user would be the nurses that use the software to assign the upcoming nurses to different patients. The nurses would have a medical background and should have basic technical capabilites to navigate the software. The responsibilities of the nurses are to create an schedule that utilizes the other nurses' time efficiently. The nurses' jobs of assigning incoming nurses should be made easier by the software that suggests the best nurses for each of the rooms/patients. The user should be able to succeed in creating the best schedule. A problem that might interfere with success would be if the software fails to update or is inaccessable by other nurses. Another primary user would be the IT specialists that are in charge of keeping the program running smoothly. Since the software will have to be HIPAA compliant, it must be hosted by their secure systems and be maintained by OU Hospital employees.

2.3 User Environment

The environment will have multiple nurses accessing the room assignment information with the ability to update assignemnts themselves. Whether there are specific nurses that have priveleges to update this information or if all will have access is currently undetermined. The task cycle should be able to be completed during the windows in between shifts. The software must be HIPAA compliant and in a controlled environment to prevent security compromises. It may be later ported to iOS to allow nurses to use the software on iPads, but the current development will be a .NET application. The software must be able to interact with the current systems that the hospital uses to access patient information, as it relies on it to suggest the correct nurses for each assignment.

2.4 Key User Needs

The main issue with the current system is that it requires the nurses to manually find and choose the best nurse for each assignment. This can be difficult as there are many aspects to consider when deciding this. The system is also currently being conducted on paper, and doesn't allow for quick, clean updates that is readily accessible by everybody who might need the infromation. The users envision a program that will create lists of nurses that can be assigned to specific rooms, and one that will also be able to suggest which ones would be most efficient.

2.5 Alternatives and Competition

There are currently other applications that look to optimize nurse shift scheduling. Some of these include Smartlinx, Intrigma, and other companies. These competitors have established software applications that are able to assign nurses to patients in an efficient manner. The main weakness of these applications is the pricing, as our product would be completely free. There is also flexibility to our application, as we will be tailoring it to the needs of the NICU nurses. Companies that uses their software also have to rely on the company to keep the product updated and running, whereas our product would be maintained by OU hospital employees.

3 Stakeholders

Project Stakeholder	Degree of Involvement	Product Needs	Program Needs
Children's Hospital (as an entity)	Govern's operations every day.	Need product to perform efficiently and reliably.	Need program to be easily teachable and usable for all parties concerned.

Project Stakeholder	Degree of Involvement	Product Needs	Program Needs
Us (creators of the product)	Those who will be building the product for the hospital.	Need product to take reasonable development time and be well-built and understood in the end.	Need program to be fully understood and act how we expect when we expect, be knowledge-able of all ins and outs of it.
Patients	Those who need daily care in the hospital and who depend greatly on the organization and efficiency of the hospital.	Need product to benefit them and provide them with safety and security by means of use by the employees.	Need to program to be easily understood and reliably understood by the employees, those caring for them.
Nurses/Employees	Need to stay organized and care for the patients they are assigned in a timely manner.	Need product to have longevity, and to make sense to use. Need it to benefit and enhance their workflow, never hinder.	Need program to have connectivity between all types of employees, and to move quicker than they need to be able to move, so they can always be on top of what is happening, and be able to react and perform efficiently consistently.

4 Product Overview

4.1 Product Perspective

Our product will be designed for use in a NICU ward within a hospital. As such, it will need to interact with the systems the hospital already has in place. Much of the data is stored in Excel files, so our program will need to be able to read and write to that or a similar file format. It should also integrate into the established rhythms and physical systems present in the hospital.

4.2 Product Position Statement

Our product is for hospitals and NICU wards who want to efficiently delegate tasks to nurses. Our product is a desktop application that performs the tedious bookkeeping tasks which sap time away from qualified nurses. Unlike manual assignment methods, our product creates assignments quickly with little effort required from the user.

4.3 Summary of Capabilities

Features	Benefit
Automatic nurse assignment	More time for nurses to do nurse work
Automatic assignment logging	Less hassle to digitize log data
Automated communication	Faster notifications, more efficient than manual
Organized data entry	Easier for a trainee to learn to use

4.4 Assumptions and Dependencies

We assume we will have dummy data to work with and good communication with the hospital staff. If the staff provides new information or changes the specifications, our product will need to adapt accordingly. We also depend on them having a reliable computer to run our product on.

4.5 Cost and Pricing

This product requires no licenses, server time, or other elements that could add to the cost, so it will likely be free to produce. Should we choose to market it, we will judge how well it turned out and price it accordingly.

5 Nonfunctional Requirements

5.1 Usability

Our clients at the hospital expressed that charge nurses might be averse to using new technologies, so the scheduling application needs to be intuitive and easy to use. It should be demonstrably easier to use the application than to use the current paper scheduling techniques. Users should be able to access the application within the hospital network through a .NET web application on a

desktop or on nurses' iPads. This means that the application must be usable as both a desktop and a tablet application.

5.2 Reliability

Since the application will be used for scheduling nurses to care for infants in medical distress, it needs to available and accurate nearly always. Scheduled downtime may be acceptable, but charge nurses would have to revert to using the paper scheduling format in these cases. Due to the critical nature of the application, it must be accurate when assigning infants to appropriately certified nurses. Though the application will have some functionality tied to internet connection, it should still be usable during outages with a little more user input.

5.3 Performance

The application will mostly be used hours in advanced, so performance is not a primary concern. Once a schedule is set, the application will be primarily used statically as a display. Performance will mostly be a concern to the extent that it is quicker to use the application than to schedule by hand. This should be easy to achieve with features that optimize matching nurse location and certification.

5.4 Supportability

The OU Health software support department will need to be familiar with this product and be able to provide support when necessary. As such, we will need to give them a thorough overview of the application and provide exhaustive documentation.

5.5 Other Requirements

5.5.1Applicable Standards

The application must be HIPAA compliant since it will store patient data.

5.5.2 System Requirements

The application must be able to integrate into OU Health's current system infrastructure. From what we have seen, this would be achievable by creating a .NET application. The application must run on Windows (for desktop use) and iOS (for tablet use).

6 Documentation Requirements

This section describes the documentation that must be developed to support successful deployment and use.

6.1 User Manual

The user manual is intended to be concise but very thorough, covering all areas of the application in a well organization and clear manner. It will be written simply and clearly in basic english, covering only what is specifically necessary and a part of the application. In other words, as short as possible, while covering

every detail - an easy read. We want anyone at the hospital to be able to pick it up and figure it out, which reflects much of the application's intent, itself. An index would be very important, at the front of the book for easy reference and a small glossary could help with defining any medical words unknown. The strategy would be to describe everything, and let those descriptions garner their own worth in the mind of the one using it, as they will know the importance of some functions compared to others. It will be formatted with page numbers, a standard font that is used and native to all platforms, and in black in white. Color will not be necessary, this will make printing much cheaper. All that is required is that the information gets to the reader's brain in a quick and clear way.

6.2 Online Help

There can be an FAQ style area online, for common concerns, and even more rare issues. We will cover everything that is reasonably necessary in order to at least give a head start, if not a solution, to the problem one may be experiencing.

6.3 Installation Guides, Configuration, "Read Me" File

These can be in the form of digital files. An installation guide would likely be a pdf, and the readme either a pdf or a simple text file, for portability and simplicity. Pdf could work fine as well. There would likely be an intro section at the top of the document, as section for addressing the changes, fixes, updates, etc. to the current verson and possibly some links at the bottom for more documentation, as well as contact information should they need assistance. This should be sufficient to give the user good information and get them on their feet.

6.4 Labeling and Packaging

Most likely this will not be necessary for us. At most we will need permission to use an emblems/logos owned by the hospital, in order to officially put a badge on the product saying that it is shared between us and them, and intended for their use and their use only. For now, this would be sufficient.

7 Glossary

Not applicable right now, but could be later in a very concise format. Time will tell.